REMARKS

In the outstanding Office action, claims 1 to 19 were presented for examination. Claims 1-19 were rejected.

In this amendment applicant has amended claims 1-4, 6-8, 11, 12, 14 and 15 and has added new claims 20-23 more particularly pointing out the invention. Claims 5, 10, 13 and 16-19 have been cancelled, without prejudice. Accordingly, claims 1-4, 6-9, 11, 12, 14, 15 and 20-23 are now pending for examination and, as will be discussed in detail below, it is believed that the application is in condition for allowance.

Election

Applicant is gratified to note that claims 12-14 have been examined along with elected claims 1-11 and 15.

Specification

In the Office action the specification is objected to as failing to provide antecedent basis for the limitation "less than 3%". Applicant respectfully points out that support for this limitation can be found on page 17 of the specification, at line 2, "preferably less than 3%,. . . of hydroxyproline residues." and requests that the objection be withdrawn.

A minor amendment has been made to page 6 of the specification. The statement regarding the term "cell support" at lines 26-27 has been modified to refer to a substance or structure, for better consistency with other statements in the specification, for example at page 16, lines 1-13. The description at page 16, lines 1-13 also provides support for the amendment made.

Claim Amendments

Claims 5, 10, 13 and 16-19 have been cancelled.

Claim 1 has been amended to incorporate the subject matters of claims 5, 10 and 11.

In addition, claim 1 has been amended to recite that the number of RGD motifs is an integer, thereby making explicit subject matter which was inherent in claim 1 before the amendment. Support for this amendment can be found at page 6, line 30 of applicant's specification. A similar amendment has been made to claim 12, with similar effect.

Claim 3 has been amended, without narrowing, for consistency with claim 1.

Claim 7 has been amended by deleting the term "about".

Claim 11 has been amended to depend from claim 12 rather than from now-cancelled claim 10.

In addition, minor amendments have been made to claims 2-4, 6-8, 11, 12, 14 and 15, without narrowing, to remove the term "preferably", and for readability.

New claim 20 depends from claim 1 and recites certain structural features of the native human collagen sequences referenced in claim 1.

New claims 21 and 22 depend either directly or indirectly from claim 20 and recite certain structural features of the RGD-enriched gelatine referenced in claim 1.

New claim 23 depends from claim 12 and recites the structural features of the native human collagen sequences and of the RGD-enriched gelatine that are set forth in claims 20-22.

Support for new claims 20-23 can be found at page 16, line 15 to page 17, line 6 of applicant's specification.

Claim Rejections - 35 U.S.C. § 112 Second Paragraph

Claims 1-15 were rejected under 35 U.S.C. § 112 second paragraph for allegedly being indefinite.

The Office action alleged that in claims 1 and 12 it was not clear if the gelatin having at least 350 amino acids must also have 0.4 percent RGD motifs. Applicant respectfully submits that claims 1 and 12 are definite as now amended and were definite prior to this amendment. This is because applicant believes the language of claims 1 and 12 clearly calls for a gelatine having at least 350 amino acids also to have 0.4 percent RGD motifs.

Claims 1 and 12 have two requirements. One the one hand, the percentage of RGD motifs must be at least 0.4, and, i.e. in addition, each stretch of 350 amino acids must contain at least one RGD motif, if the RGD-enriched gelatine comprises 350 amino acids or more.

The first requirement that the gelatine has to have at least 0.4 percent of RGD motifs means that there is at least 1 RGD motif per 250 amino acids, as is explained on page 6 lines 29-30 of applicant's specification. The second requirement calls for each stretch of 350 amino acids to have at least one RGD motif and helps ensure that, in a large molecule, the RGD motifs are evenly distributed. This topic is further described at page 5 lines 9-10 of the specification.

Claim 3, as now amended, explicitly recites that the RGD-enriched gelatine comprises a proportion of RGD motifs of at least 4 per 250 amino acids. This proportion

corresponds with a RGD motif percentage of at least 1.6. Amended claim 3 is believed to be clear. With respect, applicant does not believe that the original language of claim 3 recited that the gelatin must have 250 amino acids. However, in view of the amendments now made to claim 1, with regard to a molecular weight limitation, most, if not all, of the gelatines meeting the requirements of claim 3 will have 250 amino acids.

Claim 7, as now amended by deletion of the term "about", is believed to be clear and definite.

Reconsideration and withdrawal of the rejection of claims 1, 3, 7 and 12 for indefiniteness are respectfully requested.

Claim Rejections - 35 U.S.C. § 102(e) Alleged Anticipation

In the outstanding Office action, claims 1, 2, 8, 10-13 and 15 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,992,172 to Chang et al. ("Chang et al." herein).

In reply, applicant respectfully submits that applicant's claim 1, as now amended, is distinguished from Chang et al., and therefore allowable, for reasons which will now be explained.

Claim 1, as now amended, claims a cell support comprising an RGD-enriched gelatine. At least 80% of the sequences of the RGD-enriched gelatine consisting of one or more parts of one or more native human collagen sequences. Each native human collagen sequence part has a length of at least 30 amino acids and the RGD-enriched gelatine has a molecular weight of about 30 kDa to about 200 kDa. Claim 1 recites certain requirements about the number of RGD motifs that are to be present in the RGD-enriched gelatine, which number is, of course, an integer. One requirement is that the percentage of RGD motifs related to the total number of amino acids is to be at least

0.4. In addition, if the RGD-enriched gelatine comprises 350 amino acids or more, each stretch of 350 amino acids is to contain at least one RGD motif.

The Office action refers to SEQ ID NOS: 21 and 29 of Chang et al. to support the rejections based on alleged anticipation. As described in the Office action SEQ ID NO: 21 of Chang et al. has 251 amino acids and an RGD motif. As a percentage, 1 in 251 is less than 0.4. Also, applicant's specification specifically explains, on page 6 at lines 30-31, that a sequence of 251 amino acids should have at least 2 RGD motifs if it is to be employed in the practice of the claimed invention.

Accordingly, a recombinant gelatine comprising SEQ ID NO: 21 of Chang et al. does not meet the requirement in amended claim 1 which calls for the percentage of RGD motifs related to the total number of amino acids to be at least 0.4. Therefore, applicant respectfully submits that amended claim 1 is distinguished from a recombinant gelatine comprising SEQ ID NO: 21, as described by Chang et al.

With regard to SEQ ID NO: 29 of Chang et al., applicant's amended claim 1 claims a cell support. Applicant believes that Chang et al. does not describe a cell support comprising a recombinant gelatine having SEQ ID NO: 29 nor does the Office action point to such a description in Chang et al. Accordingly, applicant respectfully submits that amended claim 1 is also distinguished from a recombinant gelatine comprising SEQ ID NO: 29, as described by Chang et al.

Furthermore, neither SEQ ID NO: 21 or SEQ ID NO: 29, as described by Chang et al. appears to provide a molecular weight meeting the requirements of amended claim 1. Amended claim 1 recite that the enriched gelatine has a molecular weight of about 30 kDa to about 200 kDa. In contrast, a polypeptide having SEQ ID NO: 21 has a molecular weight of about 22 kDa (22,373 Da), according to Table 2 of Chang et al., and a polypeptide having SEQ ID NO: 29 has a molecular weight of about 9 kDa according

to the Office action. Accordingly, applicant submits that amended claim 1 is distinguished from a recombinant gelatine comprising SEQ ID NO: 21 or 29 as described by Chang et al, or from any other polypeptide or cell support described by Chang et al., and is therefore allowable.

Claim Rejections - 35 U.S.C. § 103 Alleged Unpatentability

In the outstanding Office action, claims 1, 2 and 5-15 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Chang et al.

In reply, Applicant respectfully submits that amended claim 1 is patentably distinguished from Chang et al. and therefore allowable, for reasons which will now be explained.

The Office action argues that Chang et al. teach an RGD-enriched gelatine in which the percentage of RGD motifs is at least 0.4, and if the gelatine comprises at least 350 amino acids each stretch of (350) amino acids comprises at least one RGD motif, and concludes that it would have been obvious to coat such an RGD-enriched gelatine on to a cell support (page 6 of the Office action).

Applicant respectfully disagrees. Applicant believes that this assertion is not supported by the disclosure of Chang et al. and that applicant's invention as now claimed in amended claim 1 is more than what a person of ordinary skill in the art would find to be obvious from Chang et al. Rather, applicant believe the invention claimed in amended claim 1 is unobvious from Chang et al. and therefore patentable.

In support of the rejections for alleged unpatentability, the Office action cites ten of the sequences described by Chang et al., namely SEQ ID NOS: 21, 22, 24, 25, 26, 28, 29, 31 and 33, as allegedly disclosing certain of applicant's claim limitations. However,

it appears to applicant that none of these sequences meets the requirements of applicant's amended claim 1. The reasons for this belief follow.

As explained elsewhere herein, SEQ ID NO. 21 is a 251 amino acid sequence for a gelatine comprising an RGD motif at amino acids 215-217 but SEQ ID NO. 21 does not meet the requirement in amended claim 1 for the percentage of RGD motifs related to the total number of amino acids to be at least 0.4. Also the molecular weight of 22.3 kDa given for a gelatine according to SEQ ID NO. 21, is outside the range of about 30 kDa to about 200 kDa recited in amended claim 1.

SEQ ID NO. 22 is a 500 amino acid gelatine comprising one RGD motif. Thus, SEQ ID NO. 22 also does not meet the requirement in amended claim 1 for the percentage of RGD motifs related to the total number of amino acids to be at least 0.4.

SEQ ID NOS. 24, 28, 29 and 30 do not appear to have a molecular weight in the range of from about 30 kDa to about 200 kDa and therefore do not meet the requirements of this limitation of amended claim 1. As stated in the Office action, referring to Table 2 of Chang et al., the molecular weights of SEQ ID NOS. 24, 28 and 29 are 14.9 kDa, 17.9 kDa, 9 kDa respectively. That of SEQ ID NO. 30 is given in Table 2 of Chang et al. as 5.5 kDa.

SEQ ID NO. 25 comprises 416 amino acid residues and a single RGD motif, at amino acid positions 131-133. Accordingly, SEQ ID NO. 25 also does not meet the requirement in amended claim 1 for the percentage of RGD motifs related to the total number of amino acids to be at least 0.4.

SEQ ID NO. 26 comprises 510 amino acid residues and two RGD motifs, at amino acid positions 63-65 and 411-413, respectively. Accordingly, SEQ ID NO. 25 also does not meet the requirement in amended claim 1 for the percentage of RGD motifs

related to the total number of amino acids to be at least 0.4. As stated in applicant's specification on page 6, at lines 30-31, a sequence of 251 amino acids should have at least two RGD motifs to be employed in the claimed invention. Similarly, a sequence of 510 amino acid should have at least three RGD motifs.

SEQ ID NO. 31, like SEQ ID NO. 21, also comprises 251 amino acid residues and a single RGD motif, at amino acid positions 215-217. Accordingly, SEQ ID NO. 31 also does not meet the requirement in amended claim 1 for the percentage of RGD motifs related to the total number of amino acids to be at least 0.4 any more than does SEQ ID NO. 21.

SEQ ID NO. 33 comprises 662 amino acid residues and a single RGD motif which percentage of RGD motifs is less than is required by amended claim 1.

Therefore, applicant believes that none of the recombinant gelatins described by Chang et al. meet the requirements of the gelatins of the claimed invention as set forth in amended claim 1 with regard to the content and distribution of RGD motifs as well as molecular weight. Furthermore, Chang et al. do not appear to applicant to teach or suggest that the content of RGD motifs and their distribution in the gelatine molecule, as recited in amended claim 1, can be useful for enhancing cell attachment. Accordingly, amended claim 1 is believed to be unobvious and therefore patentable over Chang et al.

In a further rejection for alleged unpatentability set forth in the Office action, claims 1-9 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over US Patent No. 6,140,072 to Ferrari et al. ("Ferrari et al." herein).

Applicant notes that claim 10 is not included in this rejection. Applicant believes it follows, by implication, that the Office considers claim 10 to be patentably

distinguished from Ferrari et al. Now-cancelled claim 10 recited that the RGD-enriched gelatine should consist for at least 80% of one or more parts of native human collagen sequences and that the parts of native human collagen sequences should have a length of at least 30 amino acids. Claim 1 has been amended to include this subject matter from now-cancelled claim 10. Accordingly, applicant respectfully submits that amended claim 1 is patentably distinguished from Ferrari et al. for the reasons that claim 10 was implicitly so distinguished, and that amended claim 1 is therefore allowable.

Amended claim 12 relates to an RGD-enriched gelatine and recites limitations similar to the limitations relating to the RGD-enriched gelatine which appear in amended claim 1. Amended claim 12 is therefore believed patentably distinguished from Chang et al. or Ferrari et al. or any other art known to applicant, for reasons similar to those for which amended claim 1 is believed patentable.

Dependent Claims

Claims 2-4, 6-9 and 20-22 which depend from claim 1, and claims 11 and 23 which depend from claim 12, incorporate all the limitations of their respective parent claims and therefore are believed allowable for at least the same reasons that claims 1 and 12 are believed allowable. Dependent claims 2-4, 6-9, 11 and 20-23 also are believed patentably distinguished from the art of record, and therefore allowable, by the additional limitations they recite.

For example, Claims 2-4 specifically recite percentages or proportions of RGD motifs higher in value than 0.4. Applicant believes that such levels of RGD enrichment of the gelatine defined in amended claim 1, are not suggested by Chang et al., Ferrari et al., or any of the other art of record in this application.

Conclusion

In view of the above amendments and the discussion relating thereto, it is respectfully submitted that the instant application, as amended, is in condition for allowance. Favorable reconsideration and allowance are earnestly solicited. If for any reason the Examiner feels that consultation with applicant's representative would be helpful in the advancement of the prosecution, the Examiner is invited to contact the undersigned practitioner.

Respectfully submitted,

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